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EXAMINER

LY, CHEYNE D

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/059,421	Applicant(s) SHIBUYA ET AL.	
	Examiner CHEYNE D. LY	Art Unit 2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' arguments filed February 19, 2008 have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.
2. Claims 31-60 are examined on the merits.

REMARKS

3. On page 10, Applicant argues Floratos "says nothing about identifying genes." More specifically, Floratos does not describe the new limitation of processor which determines whether the open reading frame includes a putative gene based on a number of the patterns of amino acids located in the amino acid translation of the ORF, and/or weighted values associated with the patterns of amino acids located in the amino acid translation of the ORF. Applicant's argument is not persuasive because the argued limitation has been rendered obvious over the below cited prior art. For example, Floratos in view of Ishikawa describes Determines whether said open reading frame includes a putative gene based on a number of said patterns of amino acids located in said amino acid translation of said ORF (page 167, column 2, section 4.1, e.g. setting the values of the parameters L, W, and K_{min} , and page 168, column 1, Searching section, e.g. analyze a not yet characterized ORF from the genome, every pattern matching YZ28_METJA was scrutinized individually...allows the user to select any of the patterns matched by the query sequence, there exist three patterns which are specific to the kinase family, and all the proteins that match at least one of these three patterns are annotated as putative kinases), and/or weighted

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values associated with said pattern of amino acids located in said amino acid translation of said ORF (page 166, column 1, Chaining and Scoring section, e.g. score of a path within this graph is the sum of the weights of all the vertices and edges of the path, and page 167, e.g. consider together all the patterns of a particular backbone structure...the value of threshold).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 53 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

6. The claim fails to place the invention squarely within one statutory class of invention.

On page 22, line 18, to page 23, line 3 of the instant specification, applicant has provided evidence that applicant intends the “medium” to include transmission signals. As such, the claim is drawn to a form of energy. Energy is not one of the four categories of invention and therefore this claim(s) is/are not statutory. Energy is not a series of steps or acts and thus is not a process. Energy is not a physical article or object and as such is not a machine or manufacture. Energy is not a combination of substances and therefore not a composition of matter.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. **Claims are 31-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (1999) in view of Floratos et al. (1999) (Floratos hereafter).**

10. In regard to claim 31, Ishikawa describes a processor (page 253, column 1, last two lines, to column 2, line 5):

- a. An input device for inputting a genomic DNA sequence (page 251, column 1, lines 1-3, genome DNA, column 2, lines 3-7, e.g. query sequence submission page);
- b. Translates an open reading frame (ORF) of said DNA sequence into an amino acid translation (page 251, column 2, last two lines, to page 253, column 1, line 4, e.g. deduced amino acid sequence with their frame number...compared to the GenBank database...This feature helps in finding a new gene (putative gene)).

11. However, Ishikawa does not describe the pattern database comprising patterns of amino acids.

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12. Floratos describes:

- c. A pattern database comprising patterns of amino acids (page 166, column 2, 3rd paragraph, e.g. SwissProt database);
- d. Locates in said amino acid translation occurrences of said patterns from said pattern database (page 165, column 2, Pattern Matching section); and
- e. Determines whether said open reading frame includes a putative gene based on a number of said patterns of amino acids located in said amino acid translation of said ORF (page 167, column 2, section 4.1, e.g. setting the values of the parameters L, W, and K_{\min} , and page 168, column 1, Searching section, e.g. analyze a not yet characterized ORF from the genome, every pattern matching YZ28_METJA was scrutinized individually...allows the user to select any of the patterns matched by the query sequence and all the proteins that match at least one of these three patterns are annotated as putative kinases), and/or weighted values associated with said pattern of amino acids located in said amino acid translation of said ORF (page 166, column 1, Chaining and Scoring section, e.g. score of a path within this graph is the sum of the weights of all the vertices and edges of the path, and page 167, e.g. consider together all the patterns of a particular backbone structure...the value of threshold).

13. Ishikawa describes FramePlot is a new implementation of the Frame analysis, with many improvements helps in finding a new gene (putative gene) (page 251, column 2, lines 3-4).

While, Floratos describes there were no computational tools powerful enough to handle the task of pattern discovery in data sets of the size of existing protein data bases (page 164, column 2,

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last paragraph). Therefore, one of ordinary skill in the art at the time of the invention would have been motivated by FramePlot to use FramePlot with the pattern database of Floratos to greatly enhance current sequence analysis efforts to handle the task of pattern discovery in data sets of the size of existing protein databases. Therefore, it would have been obvious to one of ordinary skill in the art to make and use FramePlot of Ishikawa with the pattern database of Floratos to greatly enhance current sequence analysis efforts to handle the task of pattern discovery in data sets of the size of existing protein databases.

14. In regard to claim 32, Ishikawa in view of Floratos describes said processor translates a plurality of open reading frames in said DNA sequence into amino acid translations (Ishikawa, page 251, column 2, last two lines, to page 253, column 1, line 4, e.g. deduced amino acid sequence with their frame number...compared to the GenBank database...This feature helps in finding a new gene (putative gene)), and locates in each amino acid translation occurrences of said patterns to determine whether each said plurality open reading frames includes a putative gene (Floratos, page 165, column 2, Pattern Matching section).

15. In regard to claim 33, Ishikawa in view of Floratos describes said patterns comprise biologically significant patterns of amino acids in amino acid sequences (Floratos, page 167, column 1, line 31-41, e.g. statistical importance of the patterns...capture the many more statistically important similarities implied by the other patterns at the same support level present within SwissProt).

16. In regard to claim 34, Ishikawa in view of Floratos describes said processor identifies a match of a pattern from said pattern database in said amino acid translation (Floratos, page 167, column 1, line 31-41, e.g. statistical importance of the patterns...capture the many more

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statistically important similarities (match) implied by the other patterns at the same support level present within SwissProt database).

17. In regard to claims 35 and 36, Ishikawa in view of Floratos describes said patterns are derived from a parent database comprising at least one amino acid sequence (Floratos, page 167, column 1, line 31-41, e.g. statistical importance of the patterns...capture the many more statistically important similarities (match) implied by the other patterns at the same support level present within SwissProt database).

18. In regard to claims 37 and 38, Ishikawa in view of Floratos describes said patterns are derived by using a pattern discovery algorithm (page 168, column 1, line 3, e.g. Teiresias).

19. In regard to claim 39, Ishikawa in view of Floratos describes said ORF comprises a portion of said DNA sequence between a start codon and a stop codon (page 251, column 2, last 3 lines, page 252, column 1, line 3, e.g. start codons and stop codons).

20. In regard to claim 40, Ishikawa in view of Floratos describes said processor reports said ORF as a putative gene when a predetermined number of pattern matches is identified in said amino acid translation (page 167, column 2, section 4.1, e.g. setting the values of the parameters L, W, and Kmin, and page 168, column 1, Searching section, e.g. analyze a not yet characterized ORF from the genome and all the proteins that match at least one of these three patterns are annotated as putative kinases).

21. In regard to claim 41, Ishikawa in view of Floratos describes each pattern is assigned a weight depending upon a relevance of said pattern in determining whether said ORF comprises a putative gene (page 166, column 1, Chaining and Scoring section, e.g. once a pattern found to be matched by a substring...vertex is assigned a weight).

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22. In regard to claim 42, Ishikawa in view of Floratos describes said ORF is reported as a putative gene when the sum of weights corresponding to all patterns with matches in said amino acid translation exceeds a predetermined threshold (page 166, column 1, Chaining and Scoring section, e.g. score of a path within this graph is the sum of the weights of all the vertices and edges of the path, and page 167, e.g. consider together all the patterns of a particular backbone structure...the value of threshold).

23. In regard to claim 43, Ishikawa in view of Floratos describes said match is identified using a predetermined pattern matching algorithm (page 165, column 2, Pattern Matching section).

24. In regard to claims 44 and 45, Ishikawa in view of Floratos does not explicitly describes a memory device for storing data and instructions to be executed by said processor (page 253, column 1, last two lines, to column 2, line 5) and a display device for displaying an output from said processor Figure 1).

25. In regard to claims 46-53, and 57-61, Ishikawa in view of Floratos describes the method for utilizing the above cited system and a programmable storage medium (page 253, column 1, last two lines, to column 2, line 5) as discussed above.

26. In regard to claim 54, Ishikawa in view of Floratos describes said processor determines for each pattern in said pattern database whether the pattern is present in said amino acid translation by locating instances of said patterns in said amino acid translation, until a sum of weights corresponding to all patterns with matches all said amino acid translation exceeds a predetermined threshold, at which point said processor identifies said ORF as a putative gene (page 166, column 1, Chaining and Scoring section, e.g. score of a path within this graph is the

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sum of the weights of all the vertices and edges of the path, and page 167, e.g. consider together all the patterns of a particular backbone structure...the value of threshold).

27. In regard to claims 55, Ishikawa in view of Floratos describes a parent database comprising a plurality of amino acid sequences, said patterns in said pattern database being derived from said plurality of amino acid sequences by using a pattern discovery algorithm (Floratos, page 166, column 2, lines 1-29, e.g. Teiresias builds the set of all significant patterns found in the database D...SwissProt (parent database)); a memory device for storing data and instructions to be executed by said processor; and a display device for displaying an output from said processor (Ishikawa, page 253, column 1, last two lines, to column 2, line 5).

28. In regard to claims 46-53, and 57-60, Ishikawa in view of Floratos describes the method for utilizing the above cited system and a programmable storage medium (page 253, column 1, last two lines, to column 2, line 5) as discussed above.

CONCLUSION

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

30. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

31. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

32. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199. The USPTO's official fax number is 571-272-8300.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Dune Ly, whose telephone number is (571) 272-0716. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo, can be reached on (571) 272-3642.

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/Cheyne D Ly/
Primary Examiner, Art Unit 2168